

The opinion in support of the decision being entered today was not written for publication and is not precedent of the Board.

Paper No. 37

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAAN KAJA

Appeal No. 1998-2939
Application 08/129,077

HEARD: FEBRUARY 7, 2001

Before KRASS, JERRY SMITH and BARRETT, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 12-17, which constitute all the claims remaining in the application.

The disclosed invention pertains to a method for analyzing speech signals.

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Representative claim 12 is reproduced as follows:

12. A method for analyzing a full voiced utterance in speech, comprising the steps of:

recording speech;

dividing the recorded speed into plural time frames;

finding roots for a denominator polynomial for each of the plural time frames;

identifying a complete voiced region in the plural time frames of the divided recorded speech;

selecting in said plural successive time frames of said voiced region a starting time frame which contains a low frequency energy peak indicative of a center of a vowel sound;

using roots of the starting time frame as seeds for producing plural root tracks;

extending the plural root tracks by linking corresponding roots of each preceding time frame in the complete voiced region to corresponding root tracks and by linking corresponding roots of each subsequent time frame in the complete voiced region to corresponding root tracks; and

assigning a number of the plural root tracks to said number of formant frequencies representing the complete voiced region after the root tracks have been fully extended.

The examiner relies on the following references:

Papamichalis et al. (Papamichalis)	4,625,286	Nov. 25, 1986
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Willems (European Application)	0 275 584	July 27, 1988
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Parsons, Voice and Speech Processing, Copyright 1987 by

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McGraw-Hill, Inc.

Claims 12-17 stand rejected under 35 U.S.C. § 103. As evidence of obviousness the examiner offers Papamichalis in view of Parsons with respect to claims 12-15 and 17, adding Willems with respect to claim 16.

Rather than repeat the arguments of appellant or the examiner, we make reference to the briefs and the answer for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner and the evidence of obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of

ordinary skill in the art the obviousness of the invention as set forth in claims 12-17. Accordingly, we reverse.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221

USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). Only those arguments actually made by appellant have been considered in this decision. Arguments which appellant could have made but chose not to make in the brief have not been considered [see 37 CFR § 1.192(a)].

With respect to sole independent claim 12, the answer refers us to the final rejection of Paper No. 22. In that rejection, the examiner essentially finds that Papamichalis teaches all the features of claim 12 except for the step of selecting a starting time frame which contains a low frequency

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energy peak indicative of a center of a vowel sound. The examiner cites Parsons as teaching this step. The examiner finds that it would have been obvious to the artisan to replace the general root finding technique of Papamichalis with the energy peak technique disclosed by Parsons [Paper No. 22, pages 5-7].

Appellant argues that neither Papamichalis nor Parsons teaches the identifying step of claim 12 being performed before the extending step of claim 12. The remainder of the arguments in the briefs and the answer generally refer to specific sections of Papamichalis, and the examiner and appellant simply disagree as to what these sections of Papamichalis would have suggested to the artisan within the meaning of 35 U.S.C. § 103.

Although there are some similarities between the claimed invention and the disclosure of Papamichalis, we are constrained to agree with appellant that the specific method of independent claim 12 has not been established by the examiner to have been obvious within the meaning of 35 U.S.C.

§ 103 in view of the teachings of Papamichalis and Parsons.

Parsons is a speech processing textbook which indicates that there are two alternative techniques used generally to obtain formant frequencies of speech. One technique is to compute the roots of a speech signal by a root finding process. The other technique is to find local maxima in the spectra envelope derived from predictors of a linear prediction process [Parsons, page 212]. The examiner has essentially found that it would have been obvious to replace the root finding technique used in Papamichalis with an equivalent peak detecting technique as disclosed by Parsons. The problem with this position is that the claimed invention does not recite peak finding as a substitute for root finding. The low frequency energy peak in the claimed invention is used to determine the starting time frame for analysis and not for determining formant frequencies.

The claimed invention uses a root finding technique for analyzing speech in a plurality of time frames. The roots of the starting time frame are then used as seeds for producing plural root tracks. The plural root tracks are extended by linking corresponding roots of preceding and

subsequent time frames in a complete voiced region. Finally, a number of the root tracks are assigned to the number of formant frequencies after the root tracks have been fully extended [note steps of claim 12]. Thus, time frames of the complete voiced region and the starting time frame are determined before the root tracks are extended and assigned. We can find nothing in the teachings of Papamichalis and Parsons which teaches or suggests these steps.

The examiner notes that a segmentation point in Papamichalis could correspond to a transition between a voiced and an unvoiced point. Even if a segmentation point in Papmichalis did correspond to such a transition point, we fail to see how this segmentation point suggests the specific steps of claim 12 discussed above. Therefore, we do not sustain the examiner's rejection of claim 12 based on Papamichalis and Parsons. Since dependent claims 13-15 and 17 are rejected on the same basis as independent claim 12, we also do not sustain the rejection of these dependent claims.

Dependent claim 16 is rejected under 35 U.S.C. § 103 using the additional teachings of Willems. Since Willems does not overcome the deficiencies of Papamichalis and Parsons

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discussed above, we do not sustain the rejection of claim 16
based on Papamichalis, Parsons and Willems.

In summary, we have not sustained either of the
examiner's rejections of the appealed claims. Therefore, the
decision of the examiner rejecting claims 12-17 is reversed.

REVERSED

ERROL A. KRASS)	
Administrative Patent Judge)	
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)	
JERRY SMITH)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
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